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ABSTRACT

The results of this study do not indicate any relationship between a child's performance on a creativity test and certain personality factors contributing to creativity, as measured by the Torrance Test of Creative Thinking and the CPQ. At both third and fourth grade levels, scores for the same child on the two tests were independent of each other. (MS)

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CREATIVE THINKING AND PERSONALITY: AN EXPLORATORY STUDY OF THEIR RELATIONSHIP IN THIRD AND FOURTH GRADE CHILDREN *

By Dr. Frank E. Williams

Introduction

No one as yet has devised a fully satisfactory way to measure creativity. Yet, we know that creative potential, as much as intelligence, is responsible for scholastic achievement in school and success beyond formal education.

The matter of measuring and identifying students who might possess high creative potential is rather new. Teachers and counselors are vitally interested in restructuring the curriculum in order to better accommodate creative talent, or in some cases, even developing special programs for creative students in order to challenge and motivate them in a special way. Yet this presupposes adequate assessment devices for identifying those students who possess a high degree of creative talent. Educators are raising some rather provocative questions about what creativity tests to use, what they really measure, and seriously searching for possible measurement strategies or alternatives for identifying creative abilities among classroom students. A review of the literature on identifying and assessing creativity reveals several approaches of which the following two are of interest here.

One approach has been the development of paper and pencil tests to measure various process functions related to thinking that have appeared important to creativity. The first major efforts toward this process approach began over a decade ago by Dr. J. P. Guilford at the University of Southern California and Dr. Viktor Lowenfeld at Pennsylvania State University. These two researchers and their colleagues uncovered, simultaneously but independently in separate fields of endeavor, identical mental abilities underlying creative skills in science and in the arts. Since that time, Professor Guilford has been instrumental in developing a number of test exercises, mostly for adult groups, which measure those supposed intellectual abilities most important to the creative problem-solving process.

Subsequent to this earlier work, Dr. E. Paul Torrance then at the University of Minnesota, modified some of Guilford's test exercises and developed a whole new set of tests for young children measuring the same supposed intellectual abilities. These tests are now being used predominently by classroom teachers and educational researchers interested in assessing a student's creative potential in terms of his ability in handling certain creative thinking processess. However, even though somewhat reliable, these tests are complicated to score and have questionable validities. That is, the question of whether they really do measure creative potential has still not been answered, and some studies show that there seems to be little relationship between scores on such tests and actual productive thinking performance resulting in creative ideas, products, or acts. The most disturbing issues involved with the use of such tests are that they consist of artificial exercises unrelated to practical or socially relevant performance; they are timed and it is difficult to comprehend that creativity can be turned on and off again by a clock; and their scoring procedures

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are highly subjective and very time consuming even for a trained scorer.

A second approach for identifying creative potential has been concerned with examining the highly creative person who has made creative contributions or in which the creative process has occurred and studying his or her traits, characteristics, or attributes. This approach has consisted of studies of highly creative groups of people and is exemplified by the work of MacKinnon and his associates at the University of California at Berkeley. Others such as Taylor, McGuire, Cattell, and Drevdahl have been involved in collecting personality and/or biographical background data on groups of eminently creative individuals with attempts to determine which of their characteristics are related to creativity.

For example, Cattell and Drevdahl (1955) compared a group of one hundred and forty eminent physicists, research biologists, and psychologists selected for high creative productivity with a control group of less creative output but equal academic standing. A profile of personality factors based on the results of the study revealed marked differences between the two groups. The experimental group of creative scientists appeared much stronger in ten personality factors, such as reservation, intelligence related with abstract thinking, soberness, assertiveness, venturesomeness, sensitiveness, imagination, forthrightness, experimental behavior and self-sufficiency. Essentially the same profile of differences were discovered in a similar group involving creative people in art and literature. These researchers then concluded that personality and temperament differences may be more stable and basic than special ability differences measured by creativity tests. Test instruments that supposedly indicate a profile of personality attributes have been constructed but have only been used to a limited extent for predicting whether a person has motivation and temperament contributing toward high originality and productivity in long term, real life situations. These tests which are available attempt to assess factors which constitute a creative personality profile are the Sixteen Personality Factor Test for Adults (16 PF) and the Junior-Senior High School Personality Questionnaire (HSPQ) for adolescents, both developed and designed by Dr. Raymond B. Cattell at the University of Illinois.

A pilot study was conducted at Ball State Teachers College (1966) administering the usual measures of scholastic achievement and the Sixteen Personality Factor Questionnaire (16PF) to entering college freshmen as a comparative study for predicting college success. The purpose of that study was to explore differences between high-creative and low-creative students as identified by a creative personality profile obtained from answers on the 16PF. These two groups of students were then compared on scholastic achievement measures; such as, achievement test scores, grade-point average, college dropout rate, and on a measure of anxiety. Results of the study showed that high creative personality profile students received higher achievement test scores, higher grade-point averages, remained in school longer, and among the males were less anxious. Upon measures of anxiety the opposite trend was found for females. No attempt, however, was made to validate personality data with actual scores on creative thinking tests. To our knowledge a comparison of creative personality traits with creative thinking skills has never been reported.

There are two other studies of interest which one of the authors has been associated with in attempts to measure creative personality trait modifications as a result of some kind of training. Eberle (1967) reports upon a study of an experimental group of eighth grade students exposed to creative processes training for thirty class periods throughout the school year. Pre and post tests of creative thinking and the HSPQ were administered to both the experimental group and a matched control group. Findings indicated that four of the seven factors of this test which comprise a creative personality profile yielded personality modifications in favor of the experimentally trained gorup. Test performance of experimental subjects on the personality traits of being reserved (A), serious (F), sensitive(I), and self-sufficient (Q_2) appeared stronger after creative processes training. The main conclusion from the study points to the fact that personality correlates were modified by training, and that the kind and duration of creative processes training given to the experimental group caused these subjects to respond more as resolute, sensitive, resourceful individuals who became accustomed to making their own decisions and to think more on their own.

Another study was conducted by Hagander (1967) using matched fifth-grade pupils as experimental and control groups. The Torrance Tests of Creative Thinking and Cattell's Children's Personality Questionnaire (CPQ) were administered to both groups pre and post training. The experimental class received twenty-five creative writing lessons via fifteen minute audio tapes followed by forty-five minutes of creative story writing and telling. The CPQ was scored for those seven factors relating to a creative personality profile and each factor was analyzed. One of the seven factors, Factor E Dominance, yielded a highly significant gain ($P>.001$) in favor of the experimental subjects after training. None of the other six personality factors approached significance. His results indicated that the experimentally trained subjects of this age level became significantly more assertive, self-assured, and independent-minded.

Only very recently have researchers been exploring combinations of the two approaches discussed above by measuring creative thinking skills concurrently with creative personality profiles. No one as yet has tested the possibility of substituting a test for determining creative personality profiles in place of a creative thinking test. The purpose of this study was to seek relationships between scores on creative thinking tests designed around the thinking process approach and scores on a personality test associated with the approach of measuring personality traits and characteristics contributing to creativity. It was assumed, if significant relationships could be established between both test measures, that considerable time and scoring effort could be saved by utilizing the Children's Personality Questionnaire for younger subjects when desiring to assess creative potential since these tests can be machine scored without the problems of scoring difficulty and subjectivity which are serious restrictors in the use of creative thinking tests. This study was designed to identify creative personality trait profiles of third and fourth grade pupils and compare these to the creative thinking skills of fluency, flexibility, and originality.

Tests:

The two tests used in this study were as follows. One was a test developed by Dr. E. Paul Torrance at the University of Georgia called the Torrance Test of Creative Thinking. This is a paper and pencil test designed for young children. This test supposedly measures various process functions related to thinking that have appeared important to creativity. The disadvantage of this test is its difficulty in scoring and its questionable validity.

The other test used in the study was developed by Dr. Raymond B. Cattell and his associate, Professor John Drevdahl then working at the University of Illinois. These two researchers compared 140 eminently creative scientists selected for high productivity with a control group of other scientists whose output was less creative but who had equal academic standing. A profile of personality factors based on the results of the comparison revealed marked personality differences between the two groups. In the results of the first group of high creatives there appeared ten personality factors which were much stronger than in the second group of less creative individuals. The same personality profile was later obtained in another study of creative people in the arts and literature. The Children's Personality Questionnaire (CPQ) is a test to identify seven of these ten creative personality factors among young children and was the test used in this study to determine personality traits and characteristics of the subjects of this study.

Subjects:

The subjects of this study were pupils of a mixed third and fourth grade class at Saint Leo's School in Saint Paul, Minnesota. The children ranged in age from eight to ten years old. There were eight boys and four girls in the third grade, and twelve boys and eight girls in the fourth grade. Total number of subjects in the study was thirty-two (N = 32).

Method:

First, The Torrance Test of Creative Thinking was given to the entire group of subjects. This test consisted of a single colored 2" x 2" slide picture of Old Mother Hubbard presented by a projector on a screen.

There were three tasks assigned and each task had a five minute time limit. The first task was to ask questions about the picture which could not be answered by looking at the picture; the second was to guess causes for the action in the picture; the final task was to guess consequences resulting from the picture. Each of these tasks was scored for the three creative thinking skills of fluency, flexibility, and originality.

The Children's Personality Questionnaire (CPQ) was administered approximately two weeks after the Torrance Test of Creative Thinking. The seven factors scored on this test were those factors which Cattell had found to contribute the most to a creative personality. These seven factors are listed in Figure 1. The seven factors were weighted as directed by Information Bulletin #10 (1963) and converted to standard scores.

Personality Factors Related to Creativity Measured by The Children's Personality Questionnaire.

Factor A: reserved, cool

Factor B: intelligent

Factor E: assertive, aggressive

Factor F: sober, serious

Factor H: venturesome

Factor I: sensitive, tender-minded

Factor N: forthright, natural

Figure 1

To answer the research question of this study, is there a correlation between certain personality factors and creative thinking performance, the subjects were ranked from high to low in terms of their total creative thinking score obtained from the Torrance Tests of Creative Thinking. The three highest and three lowest scores from third grade subjects and three highest and three lowest scores from fourth grade subjects on the Torrance Creativity Test were ordered; then these scores were correlated with the same pupil's scores on the Children's Personality Questionnaire by means of rank order correlation coefficients.

RESULTS

In order to correlate the Torrance Test of Creative Thinking with the Children's Personality Questionnaire, only total scores were used. The sums of subfactors comprising the total scores on the Torrance Test and the CPQ are shown in Tables 1 and 2 by grade level.

Rank Order of the Three Highest and Lowest Raw Scores on the Torrance Test of Creative Thinking with CPQ Scores for Third Grade - N = 12

Torrance Test of Creative Thinking					CPQ Weighted Stens Factors							
Student	Fluency	Flexibility	Originality	total score	A	B	E	F	H	I	N	total score
1	26	17	27	70	2	10	4	4	10	2	9	41
2	23	17	24	64	10	6	4	16	5	14	6	61
3	17	10	23	50	8	16	5	12	8	2	5	56
9	12	12	13	37	14	12	7	8	9	8	5	63
10	12	12	13	37	10	10	7	16	4	14	5	66
11	10	5	14	29	4	16	6	12	7	12	10	67
12	8	7	5	20	12	4	5	12	7	4	5	49

Table 1

Rank Order of the Three Highest and Lowest Raw Scores on the Torrance Test of Creative Thinking with CPQ Scores for Fourth Grade - N = 20

Torrance Test of Creative Thinking					CPQ Weighted Stens							
Student	Fluency	Flexibility	Originality	total score	A	B	E	F	H	I	N	total score
1	26	15	34	75	14	12	7	8	9	8	5	63
2	23	19	28	70	6	14	5	16	6	10	6	63
3	25	19	25	69	14	10	7	6	4	10	2	53
18	10	10	12	32	12	16	6	12	2	10	6	64
19	13	12	5	30	14	10	6	10	7	12	9	68
20	9	8	10	27	14	12	2	14	5	10	5	62

Table 2

For each child's total creativity score found on the Torrance Test of Creative Thinking the three factors of fluency, flexibility and originality for each of the three tasks (nine scores) were summed. For each child's total personality profile found on the Children's Personality Questionnaire, the weighted standard scores for each of the seven personality factors contributing to creativity were summed. The rank order correlation coefficient for third grade pupils was -.366. To be significant at the .05 level of confidence, the coefficient would have to be greater than +.786 or less than a -.786; while it would have to be greater than +.929 or less than a -.929 to be significant at the .01 level of confidence. The rank order correlation coefficient for fourth grade pupils was -.128. For an .05 significance level, the coefficient would have to be greater than +.886 or less than a -.886; and for a .01 level of significance greater or less than 1.00. Thus, at both grade levels, scores for the same child on the Creative Thinking Test and the Children's Personality Questionnaire were independent of each other.

SUMMARY

This study has attempted to answer the question, "Is there a relationship between a child's performance on a creativity test and certain personality factors contributing to creativity?" The answer as indicated by the results of the study does not indicate any relationship as far as the measures used in this study. It has not been shown, of course, whether no correlation actually exists between creative performance and personality factors, or whether the tests of both factors which are presently available do not measure the correlation which may exist. It is clear from the results that two different behaviors are being measured by the tests used in this study. What has been illustrated in this study is that the two types of creativity tests, those measuring creative factors of personality and those measuring creative thinking performance may not be substituted for each other as measures of the same child's creativity.

Teachers and counselors interested in assessing creative potential must be aware of deficiencies which continue to exist in available testing devices. Restrictions on the use of one test designed for measuring creativity, however, may be no more serious than for any other single measurement device when purporting to assess human potential. Multiple assessment devices seem to still provide the best approach; and this study provides clues which point to

the necessity of using several kinds of tests, creative thinking as well as personality and others, when attempting to measure various kinds of talent as complicated and diverse as those which constitute creativity.

One of the most significant implications from an analysis of these data for the classroom teacher is the discrepancy that exists among some children between high potential in terms of possessing a creative temperament and the display of low performance on a test supposedly designed to tap creative thinking. If this discrepancy does occur, as it did in this study, the teacher should seriously consider the kinds of opportunities, or lack of opportunities, creative children are given in the classroom for releasing or developing their full creative potential.

Needless to say, much remains to be studied in the field of creativity. including its relationship to both intellectual and personality factors. Presently, what is termed "creativity" includes various behaviors comprised of different factors. Until research further delineates creativity, no single test may be used to exhaustively measure creativity.

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